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Para códigos de dos letras y otras abreviaturas, véase la sección
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principio de cada número regular de la Gaceta del PCT.

(54) Title: FLUID COMPOSITION FOR PRODUCING AND REPAIRING ION EXCHANGE MEMBRANES

(54) Título: COMPOSICIÓN FLUIDA ADECUADA PARA LA PRODUCCIÓN Y REPARACIÓN DE MEMBRANAS DE IN-
TERCAMBIO IÓNICO

(57) Abstract: Fluid composition containing ion exchange copolymer which is perfluorated with functional groups -SO₃M, M-hydrogen ions or ions of alkaline metals (EM higher than 900) and a polar organic solvent or a mixture of a polar organic solvent and a non polar solvent and, as perfluorated ion exchange copolymer, the composition contains a perfluorated ion exchange copolymer having a crystallinity grade from 2 to 10 % and a ratio between the density of the indicated ion exchange copolymer and the density of the original perfluorated copolymer in non ionic form between 0.9 and 0.97. The proportion of the components is in % by weight: perfluorated ion exchange copolymer 1-35; polar organic solvent or mixture of polar organic solvent with non polar solvent 65-99. Such compositions are used in the production and repair of ion exchange membranes (IEM) which are used in the alkaline electrolysis with chlorine or in the water electrolysis in fuel/gas separation cells.

A1
WO 01/07517 A1
(57) Resumen: Composición fluida que contiene copolímero de intercambio iónico perflorado con grupos funcionales -SO₃M, iones de M-hidrógeno o iones de metales alcalinos (EM mayor de 900) y un disolvente orgánico polar o una mezcla de un disolvente orgánico polar y un disolvente no polar y, como copolímero de intercambio iónico perflorado, la composición contiene un copolímero de intercambio iónico perflorado con un grado de cristalinidad del 2 al 10 % y una relación entre la densidad del copolímero de intercambio iónico indicado y la densidad del copolímero perflorado original en forma no iónica de 0,90-0,97. La relación de los componentes es, ca % en masa: copolímero de intercambio iónico perflorado 1-35, disolvente orgánico polar o mezcla de disolvente orgánico polar con disolvente no polar 65-99. Tales composiciones se usan en la producción y reparación de membranas de intercambio iónico (IEM), que se usan en la electrólisis alcalina con cloro en la electrólisis acuosa en celdas de separación de combustible y gas.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 99/00278

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C08L 27/18; 27/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C08L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPODOC, WPI, CIBEPAT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US - 4453991 A (WALTHER G. GROT et al.) 12 June 1984 (12.06.84)	
A	US - 4386987 A (MICHAEL J. COVITCH) 07 June 1983 (07.06.83)	
A	EP - 0025644 A (ASAHI GLASS COMPANY LTD) 25 March 1981 (25.03.81)	

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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Information on patent family members

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1/1

Table I. Preparation conditions for the compositions. Their composition and properties.

Nº	Copolymer TPE-SVE	Preparation conditions				Concentration of dissolved copolymer, % in mass	Composition properties							
		Abbre- viation y, g	Equivalen- t Mass	Cristal- linity degree, %	Form	Solvents								
						Polar	Non polar	Total mass, g						
1	SPL-2	4	2600	10	0.97	-HSO ₃	Isopropanol	-	196	80	4	2	2	8
2	SPL-1	12	1030	2	0.9	-NaSO ₃	Methyl ethyl ketone	-	83	20	2	12	40	
3	SPL-4	8	1070	8	0.95	-KSO ₃	Ketone	-	92	22	1	8	38	
4	SPL-4	9.3	1070	6	0.93	-KSO ₃	Ethanol	-	91	75	2	9.3	30	
5	SPL-3	35	1100	9	0.92	-LiSO ₃	Dimethylformamide	-	65	80	2.5	35	450	
6	SPL-5	10	1600	10	0.97	-HSO ₃	Dimethylformamide + Ethanol	-	90	95	2	10	51	
7	SPL-1	15	1000	4	0.94	-NaSO ₃	Ethanol + methyl ethyl ketone 1:1	-	85	80	1.5	15	63	
8	SPL-2	1	2600	10	0.97	-HSO ₃	Ethanol	1,1,1 Trichloro- trifluoroethane	99	80	1	1	5	
9	SPL-6	7	1200	7	0.96	-HSO ₃	Isopropanol	Benzene	93	75	3	7	23	
10	SPL-7	6	1700	7.5	0.963	-LiSO ₃	Isopropanol	Benzene	87	90	2	6	15	
11	SPL-6 (Control)	2	1200	12	0.97	-HSO ₃	Isopropanol	-	198	75	3	0	-	
12	SPL-6 (Control)	2	1200	10.5	0.993	-HSO ₃	Isopropanol	-	198	75	3	0	-	